Utilization of New Mexico's Cotton Ginning Capacity, 1970-71

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Summary

During the 1970-71 harvest season, 62 gin plants (54 saw gins and 8 roller gins) were operating in the study region. Nearly 50 percent of the per-hour ginning capacity was concentrated in the Dona Ana and Chaves county study areas. On the average, during the 1970-71 harvest period, the eight roller gins processed 220 bales per plant more than did the 54 saw gins (2,567 bales vs. 2,347 bales). The average number of bales ginned per plant during the 1970-71 season was 235 bales less than in 1969-70. During the last three harvest seasons (1968-1971), an increasing proportion of the study region's cotton production was processed on roller gins. This was due to the substantial increase of Upland cotton processed on roller gins. During the 1970-71 season, each study area except Luna County had excess plant capacity. Excess plant capacity appeared most acute in the Hidalgo, Dona Ana (south), Chaves, and Roosevelt-Quay areas.

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Stephen Fuller and William Vastine[1]

This report describes the physical capacity of New Mexico's cotton ginning facilities and determines the extent that this capacity was used during the 1970-71 ginning season. Several measures of excess ginning capacity were constructed for the period under study.

This research report is the first in a series dealing with the processing and marketing of New Mexico cotton.[2] The ultimate objective of the overall study is to determine the number, size, and location of gins needed for the most efficient processing and marketing of New Mexico cotton.[3] To accomplish this objective, a knowledge of the existing industry is necessary; that need has given rise to this base-study report.

Generally, total cotton production (total of Upland and American Pima varieties) in the United States and in New Mexico has been trending downward during the past ten years.[4] In 1961, total New Mexico cotton production was approximately 300,000 bales, but by 1970 cotton production had decreased to 143,200 bales. This represents a 52.3 percent decrease in total production.[5] But despite the decreased production of New Mexico cotton, the value of cotton lint and cotton seed ranked second ($20.6 million) among all New Mexico crops grown, 1970.[6]

Some of the major factors contributing to decreased production are (1) the USDA cotton program, which provided farmers with incentive to reduce acreage, (2) the decrease in per acre yields, and (3) the diminishing competitive position of cotton in the fibers market. The decrease in production has not been accompanied by a proportional decrease in ginning capacity. As noted above, there was a 52.3 percent decrease in production between the years 1961 and 1970; however, during this same time period New Mexico's total bale per

[1]Assistant Professor and former Associate Professor, Department of Agricultural Economics, New Mexico State University.

[2]The U. S. Department of Agriculture, Consumer and Marketing Service, Cotton Division, El Paso, Carlsbad, and Lubbock Classing Offices provided much of the data for this report. The authors wish to acknowledge the helpful comments of Dr. Thomas Clevenger, Associate Professor, Department of Agricultural Economics, New Mexico State University, Edwin J. O'Neal, Extension Cotton Marketing and Utilization Specialist, New Mexico State University, and Mark Stroup, Research Associate, Department of Agricultural Economics, New Mexico State University.

[3]This approach to the study of marketing efficiency came to fruition with the development of mathematical programming and the digital computer. Several examples of recent studies employing efficiency models to marketing organization research are: (1) Location and Efficiency of the Iowa Feed-Manufacturing Industry, by Allan Warrack and Lehman Fletcher, Iowa State University, Research Bulletin 571, March 1970, and (2) Least-Cost Number, Size and Location of Turkey-Processing Plants in Minnesota, Iowa, and Wisconsin, by George W. Ladd and M. Patrick Halvorson, North Central Regional Research Publication No. 197, Iowa State University, August 1969.

[4]Pima cotton production in New Mexico has increased; however, the decrease in Upland cotton production has been substantial enough to decrease total cotton production.

[5]New Mexico Agricultural Statistics, New Mexico Department of Agriculture cooperating with the USDA Statistical Reporting Service, Vol. VI, July 1971.

[6]Ibid.

hour ginning capacity decreased by only 15 percent. In 1961, New Mexico gins had the capacity to process 445 bales per hour, but by 1970 this capacity had decreased to 379 bales per hour. Decreased total production divided among a relatively constant number of gins has given rise to excess "gin plant" capacity.[7] Excess plant capacity decreases the productive efficiency, which in turn increases the per bale cost of the ginning operation.

Physical Capacity of Ginning Facilities, 1970-71

To facilitate a more accurate descriptive analysis, the cotton producing region under study was sub-divided, so that, characteristics of ginning facilities could be determined by geographical areas. Generally, a simple county-by-county breakdown was used; however, in some situations it was necessary to aggregate counties because only one firm operated in a county. The descriptive analysis is based on the following geographic areas: Hidalgo County, Luna County, Dona Ana County and surrounding areas (Sierra, Socorro and Otero counties), the El Paso County area north of El Paso, Texas, Chaves County, Eddy County, Lea County, and the Roosevelt-Quay area.

Gin Plant Numbers and Location

During the 1970-71 cotton ginning season, 62 commercial cotton gin[8] plants were operating in the study region, seven of which were located in the Texas study area. (See figure 1 for their location.) Eight of the plants were roller gins,[9] four of which were in Dona Ana County, three in the Texas study area, and one in Luna County (table 1). The roller gins are located in Dona Ana, Luna, and Texas study areas because it is in these areas that the American Pima cotton production is concentrated. This extra long staple type cotton requires processing on roller gins.

Table 1. Number of commercial saw and roller gin plants by study areas, 1970-71

Area	Number of Saw Gin Plants	Number of Roller Gin Plants
Hidalgo	2	
Luna	4	1
Dona Ana[1]	14	4
Texas (North El Paso)[2]	4	3
Chaves	10	
Eddy	8	
Lea	7	
Roosevelt-Quay	5	
Total	54	8

[1]Includes Dona Ana, Socorro and Otero counties.
[2]Includes those gin plants north of El Paso which are located in Texas.

More that 50 percent of the gin plants are in the Dona Ana, Chaves, and Eddy county areas. This is expected, since these areas have a combined production which exceeds 50 percent of the regions' total production.

The 62 commercial gin plants were operated by 25 different gin companies. Ten of the gin companies were multiplant businesses.[10] One gin company operated five

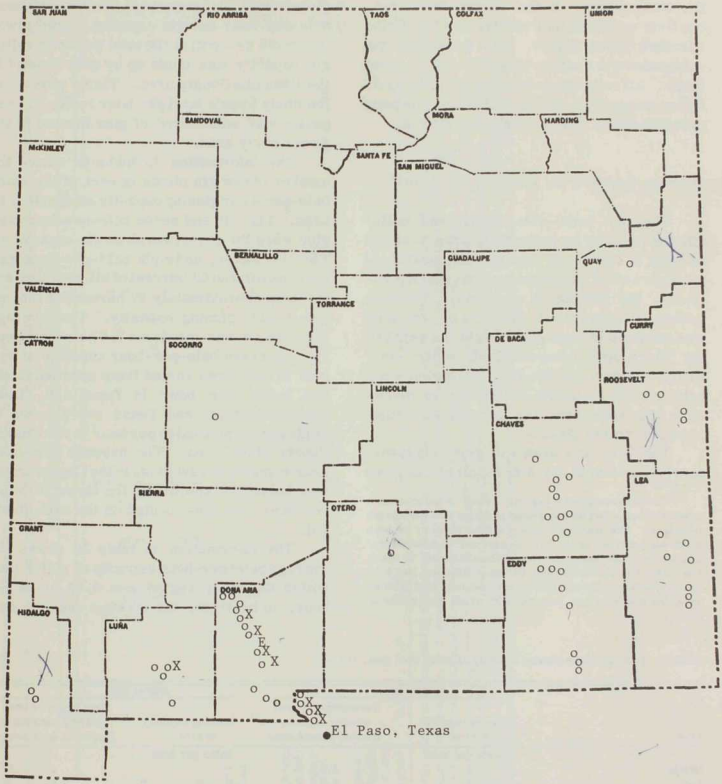
[7]A "gin plant" refers to a complex of ginning equipment capable of fully processing seed cotton into a bale of lint cotton. In contrast, a gin company refers to the complete business organization. A gin company may be composed of several "gin plants."

[8]Commercial cotton gins are defined as either cooperative or independent gins that processed a farmers's cotton for hire.

[9]The roller gin separates cotton fibers from cottonseed by means of a rotating roller and a knife whose blade is parallel to and touching the surface of the roller. The seed cotton is fed onto the roller just ahead of the knife. The close proximity of the knife to the roller prevents the seed from passing between the knife and the roller. The continued rotation of the roller removes the fiber from the seed. In contrast, the saw gin consists of saws turning between steel ribs at the ginning point approximately parallel to the rib face. Cotton enters the gin stand through a hulier front which performs some cleaning action. The saw grasps the locks of cotton, drawing them through a spaced set of ribs known as "huller ribs," which removes hulls and sticks, allowing them to fall out of the machine. The locks of cotton are drawn into the roll box from the huller ribs where the removal of the fibers from the seed takes place.

[10]A multiplant gin company is one that operates more than one gin plant. See footnote 7 for definition of a gin plant.

Figure 1. Location of saw and roller gin plants operating in the study region, 1970-71



o -- saw gin plant location (total of 54 saw gin plants in study region)
X -- roller gin plant location (total of 8 roller gin plants in study region)
E -- Southwest Cotton Ginning Research Laboratory, A.R.S., U.S.D.A.

separate gin plants; this was the largest number of gin plants operated by any company in the study region. In the Chaves-Eddy area, one firm operated four plants, and two firms operated three plants. All remaining gin companies were either single or double plant firms. All roller gins were operated by multiplant companies, but no multiplant company operated more than one roller-gin plant.

Ginning Capacity by Geographic Area[11]

The per hour saw ginning and roller ginning capacity by geographic area is shown in table 2. Dona Ana County gins constituted 27.9 percent of the region's total ginning capacity, the largest of any area. Approximately 21 percent of this ginning capacity was made up of saw gins, while the remaining share was comprised of roller gins. Nearly 90 percent (89.1) of the region's per hour ginning capacity was made up of saw gins; the remaining ten percent was comprised of roller gins.

The Dona Ana area saw gins constituted nearly one-fourth (23.5 percent) of the study region's total bale-per-hour saw ginning capacity; however, the Chaves area followed closely with 22.5 percent of the region's total bale-per-hour saw gin capacity. Nearly two-thirds (64 percent) of the total per hour roller gin capacity was made up by gins located in the Dona Ana County area. Thirty percent of the study area's total per hour roller gin capacity was constituted of gins located in the Texas study area.

The information in table 3a shows the number of saw gin plants in each of the rated bale-per-hour ginning capacity categories, by area. The six and seven bale-per-hour saw gins were the most prevalent gin capacities. The six, seven, and eight bale-per-hour saw gins constituted 63 percent of all saw gins and made up approximately 57 percent of the region's saw ginning capacity. The average size saw gin was rated as a 7.5 bale-per-hour gin. Average bale-per-hour capacity of saw gins in each area varied from approximately 6.5 bales per hour in Dona Ana, Lea, Roosevelt-Quay, and Texas study areas to slightly over nine bales per hour in the Chaves County study area. The average bale-per-hour capacity of saw gins, in the Chaves area, was bolstered upward by the three 15 bale-per-hour saw gins located in the area (table 3a).

The information in table 3b shows the average bale-per-hour capacity of roller gins within the study region was 6.25 bales per hour, in contrast, the average capacity saw

[11] The per hour ginning capacity refers to the maximum number of bales that can be ginned per hour with the present equipment. The maximum bale per hour capacity of each plant was provided by the U. S. Department of Agriculture, Consumer and Marketing Service, Cotton Division, El Paso, Carlsbad, and Lubbock Cotton Classing Offices. Per hour ginning capacity by geographic area was determined by summing the maximum per hour capacity of all gins within an area.

Table 2. Total per hour ginning capacity of study area gins, 1970-71

Area	Saw Gin		Roller Gin	
	Ginning capacity of area	Percentage of total ginning capacity located in each area	Ginning capacity of area	Percentage of total ginning capacity located in each area
	bales per hour		bales per hour	
Hidalgo	14	3.5		
Luna	31	7.7	3	6.0
Dona Ana	95	23.5	32	64.0
Texas (North El Paso)	26	6.4	15	30.0
Chaves	91	22.5		
Eddy	69	17.0		
Lea	46	11.4		
Roosevelt-Quay	33	8.0		
Total	405	100.0	50	100.0

Table 3a. Number of saw gin plants of various rated bale-per-hour ginning capacity, by study area, 1970-71

Area	Plants by Rated Bale-per-Hour Ginning Capacity													Average Gin Capacity by Area
	3	4	5	6	7	8	9	10	11	12	13	14	15	
	number													bales per hour
Hidalgo					2									7
Luna					3			1						7.75
Dona Ana		1	4	3	3			2		1				6.78
Texas (North El Paso)			1	1	1	1								6.50
Chaves	1		1	2		1	2						3	9.10
Eddy				1	1	4		1				1		8.62
Lea			1	3	1	2								6.57
Roosevelt-Quay				2	3									6.60
Total number of plants in each rated bale-per-hour ginning category	1	1	7	12	14	8	2	4		1		1	3	7.50 (State)
Total per hour saw ginning capacity of each rated bale-per-hour ginning category for study region[1]	3	4	35	72	98	64	18	40		12		14	45	405.0 (Total)
Percent of per hour ginning capacity constituted by each rated bale-per-hour ginning category for study region[2]	0.75	0.98	8.65	17.77	24.19	15.81	4.45	9.87		2.96		3.46	11.11	100.0

[1]The values in this row were determined by multiplying the number of plants in that rated bale-per-hour category by the rated bale-per-hour capacity of saw gins within that category. For example, to determine the total bale-per-hour capacity of six bale-per-hour saw gins within the study region, the number of plants (12) was multiplied by (6) to determine the total bale-per-hour capacity constituted by six bale-per-hour gins. (12 plants x 6) = 72

[2]The values (percentages) in this row were arrived at by dividing the total bale-per-hour capacity of each rated bale-per-hour category by the total bale-per-hour capacity of all saw gins within the study region and then multiplying this value (quotient) by 100 in order to establish percentages. For example, to determine the percentage of bale-per-hour capacity constituted by six bale-per-hour saw gins, it was necessary to divide total bale-per-hour capacity constituted by six bale-per-hour gins (72) by total bale-per-hour capacity of the study region's saw gins (405) and then multiply by 100. 72/405 = .1777 (.1777 x 100 = 17.77%)

Table 3b. Number of roller gin plants of various rated bale-per-hour ginning capacity, by area, 1970-71

Area	Plants by Rated Bale-per-Hour Ginning Capacity								Average Gin Capacity by Area
	3	4	5	6	7	8	9	10	
	number								bales per hour
Hidalgo									
Luna	1								3
Dona Ana				1		2		1	8
Texas (North El Paso)		1	1	1					5
Chaves									
Eddy									
Lea									
Roosevelt-Quay									
Total number of plants in each rated bale-per-hour ginning category	1	1	1	2		2		1	6.25 (State)
Total per hour roller ginning capacity of each rated bale-per-hour ginning category for study region[1]	3	4	5	12		16		10	50.0 (Total
Percent of per hour ginning capacity constituted by each rated bale-per-hour ginning category for study region[2]	6	8	10	24		32		20	100.0

[1]The values in this row were determined by multiplying the number of plants in that rated bale-per-hour category by the rated bale-per-hour capacity of roller gins within that category. For example, to determine the total bale per hour capacity of six bale per hour roller gins within the study region, the number of plants (2) was multiplied by (6) to determine the total bale-per-hour capacity constituted by six bale-per-hour gins. (2 plants x 6) = 12

[2]The values (percentages) in this row were arrived at by dividing the total bale-per-hour capacity of each rated bale-per-hour category by the total bale-per-hour capacity of all roller gins within the study region and then multiplying this value (quotient) by 100 in order to establish percentages. For example, to determine the percentage of bale-per-hour capacity constituted by six bale-per-hour roller gins, it was necessary to divide total bale-per-hour capacity constituted by six bale-per-hour gins (12) by total bale-per-hour capacity of the study region's roller gins (50) and then multiplying by 100. 12/50 = .24 (.24 x 100 = 24%)

gin was 7.5 bales per hour. Seventy-five percent of the region's roller gin capacity is made up of six, eight, and ten bale-per-hour gins.

Proportion Processed by Gin Plants With Greatest Volume

In the 1969-70 season, the five gins (eight percent of all gins) with the greatest total volume (28,225 bales) processed 16.89 percent of the total cotton ginned in the study region (table 4). In the 1969-70 season the five gin plants processing the greatest volume were all saw gins; however, in the 1970-71 season, one of these plants was a roller gin. Three of those gin plants which processed the greatest volume during the 1969-70 season were among the largest five processors during the 1970-71 season. Those five gin plants with the smallest volumes processed 2.05 percent of the cotton processed within the region.

Roller-Ginned Cotton

In the 1970-71 harvest season, 13.94 percent of the cotton processed within the study region was roller-ginned; in comparison, during the 1968-69 season, only eight percent was roller-ginned (table 5). The quantity of roller-ginned Pima cotton has been relatively constant over the three-year period, ranging from a low of 12,199 bales in the 1970-71 season to a high of 13,770

Table 4. Number of bales ginned by plants processing the largest volumes and by plants with smallest volumes, 1969-71[1]

Gin Plants with--	1969-70 Number of bales	1969-70 Average number of bales ginned per plant	1969-70 Percent of total	1970-71 Number of bales	1970-71 Average number of bales ginned per plant	1970-71 Percent of total
5 largest volumes	28,225	5645.0	16.89	22,813	4562.6	15.48
10 largest volumes	51,673	5167.3	30.92	41,765	4176.5	28.35
20 largest volumes	86,301	4315.0	51.65	72,045	3602.2	48.91
10 smallest volumes	9,421	942.0	5.63	9,183	918.3	6.23
5 smallest volumes	4,191	838.2	2.50	487	697.4	2.20

[1]Those five plants which had the greatest volume are included in those ten and twenty plants with the greatest volume. Likewise, those five plants with the smallest volume are included among those ten plants with the smallest volume.

Table 5. Number of bales processed by roller gins, 1968-71

Item	1968-69 Pima	1968-69 Upland	1969-70 Pima	1969-70 Upland	1970-71 Pima	1970-71 Upland
Number of bales by type	13,026	1,560	13,770	2,567	12,199	8,346
Percent of cotton by type	(89.31%)	(10.69%)	(84.29%)	(15.71%)	(59.38%)	(40.62%)
Total number of bales	14,586		16,337		20,545	
Average number of bales	1,823		2,042		2,568	
Roller ginned cotton as a percentage of all cotton processed	(8.00%)		(9.77%)		(13.94%)	

bales in the 1969-70 season. The large increase in the proportion of cotton roller-ginned during the 1970-71 season can be attributed to an increasing quantity of Upland cotton processed on roller gins. During the 1969-70 season, 2,567 bales of Upland cotton were processed on roller gins; during the 1970-71 season, however, 8,345 bales were processed on roller gins. This represents a 271 percent increase in the quantity of Upland cotton processed on roller gins.

During the 1970-71 season, roller-ginned Upland cotton returned five to seven cents a pound to the producer over similar cotton processed on saw gins. The increased price for roller ginned Upland cotton is attributed to increased demand by India and Pakistan for this type of cotton. This demand was influenced by the provisions of Public Law 480, a U.S. government-financed export program. Foreign demand for much of the roller-ginned Upland cotton is dependent upon our government's position toward the Public Law 480 export programs; consequently, the stability of this demand is uncertain.

Measures of Gin Use, 1970-71

Average Quantity Ginned Per Plant, 1970-71

The average number of bales of cotton processed per plant by area during the 1970-71 harvest season is shown in table 6. The Luna County area had the largest average number of bales processed per saw gin plant (3,857 bales), while the Roosevelt-Quay area ginned the smallest quantity of cotton per saw gin plant (1,077 bales) (table 6). On the average, the study region's roller gins were slightly more fully used than were the study region's saw gins. This is evidenced by the fact that on the average, the study region's saw gins processed 2,347 bales per plant while, the roller gins processed 2,567 bales per plant.

The information in table 7 shows that during the 1969-70 harvest season, 64 gin plants operated in the study region, and during the 1970-71 season, 62 gin plants were operated. The two-plant loss resulted when

Table 6. Average quantity of cotton saw and roller ginned per plant, by area, 1970-71

Area	Average Number of Bales Saw Ginned[1]	Average Number of Bales Roller Ginned[2]
Hidalgo	2533	
Luna	3857	2784
Dona Ana	2110	2653
Texas (North El Paso)	2991	2380
Chaves	2070	
Eddy	3116	
Lea	1961	
Roosevelt-Quay	1077	
Average	2347	2567

[1]Most of the saw ginned cotton is of the Upland variety.
[2]The roller ginned cotton includes both Upland and Pima varieties.

three gin plants discontinued their ginning service and a remodeled gin plant commenced ginning. Those gin plants discontinuing service were a roller and a saw gin located in Dona Ana County and a saw gin located in Chaves County. The remodeled gin, located in Luna County, had last operated as a saw gin during the 1968-69 season but was equipped with roller stands and operated as a roller gin during the 1970-71 season. Even though plant numbers decreased by two during this two-year period, the average number of bales processed per plant in the region decreased by 235 (table 7).

During the 1970-71 season, no gin plants within the study region processed more than 5,000 bales; in contrast, during the 1969-70 season, five gin plants processed over 5,000

Table 7. Number of gins processing at various ginning level categories, 1969-71

Season and Number of Bales Ginned	Saw Ginning Plants	Roller Ginning Plants	Total Plants	Percentage of Plants
1969-70	number	number	number	
0- 999	5	1	6	9.37
1000-1499	6	1	7	10.93
1500-1999	11	2	13	20.31
2000-2499	9	2	11	17.18
2500-2999	4	2	6	9.37
3000-3499	7		7	10.93
3500-3999	4		4	6.25
4000-4499	1		1	1.56
4500-4999	4		4	6.25
5000-5499	2		2	3.12
5500-5999	3		3	4.68
Average bales ginned per plant	2692	2042	2611	
Total gin plants	56	8	64	
1970-71				
0- 999	6	1	7	11.29
1000-1499	3		3	4.84
1500-1999	11	2	13	20.97
2000-2499	13	2	15	24.19
2500-2999	9	1	10	16.13
3000-3499	2	1	3	4.84
3500-3999	4		4	6.45
4000-4499	4		4	6.45
4500-4999	2	1	3	4.84
5000-5499				
5500-5999				
Average bales ginned per plant	2347	2567	2376	
Total gin plants	54	8	62	

bales (table 7). Approximately three-fourths (77.4 percent) of the study region's gin plants processed less than 3,000 bales per plant during the 1970-71 harvest season. During the 1969-70 ginning season, about two-thirds of all gins processed less than 3,000 bales per plant. The decrease in production during the 1970-71 season is responsible for the increase in the proportion of gin plants processing less than 3,000 bales.

Utilization of Ginning Capacity

The four potential weekly ginning outputs in table 8 are based on hypothetical number of hours operated by gin plants per week. For example, in the Luna County area, the four potential ginning output levels are 1,632, 1,904, 3,264 and 3,536 bales per week and are based on the assumption that gin plants in the region operate 60, 70, 120, and 130 hours per week, respectively. See table 8 for a full explanation of how each weekly output level was determined. The number of weeks required to process each area's output (table 9) was determined by dividing each area's 1970-71 output by each area's estimated weekly output levels (table 8). For example, if each of the gins in the Hidalgo County study area would have operated 60 hours per week (at the assumed 80 percent efficiency discussed in table 8) it would have taken 7.54 weeks to process that area's production. If each of the area's gins had operated 70, 120 or 130 hours per week, it would have taken 5.585, 3.77 and 3.15 weeks, respectively (table 9).

The number of weeks required to gin each area's output (table 9) as based on four gin utilization levels should not be interpreted as the correct or exact amount of time that should have been required to gin that area's production. Rather, it should be interpreted only as an indication of gin use by area during the 1970-71 season. The greater the number of weeks required to gin an area's output, the more fully utilized is that area's ginning ca-

Table 8. Potential weekly ginning capacity as determined by four alternative gin utilization levels, 1970-71

Area	Bales Ginned per Week			
	Six Days		Seven Days	
	Single shift (60 hours)[1]	Double shift (120 hours)[2]	Single shift (70 hours)[3]	Double shift (130 hours)[4]
	number	number	number	number
Hidalgo	672	1344	862	1602
Luna	1632	3264	1904	3536
Dona Ana (South)[5]	4368	8736	5096	9464
Texas (North El Paso)	1992	3984	2324	4316
Dona Ana (North)[6]	1536	3070	1792	3328
Chaves	3468	8736	5096	9464
Eddy	3312	6624	3864	7176
Lea	2208	4416	2576	4784
Roosevelt-Quay	1584	3168	1848	3432
Total	21636	43342	25362	47102

[1]To estimate weekly gin capacity (bales/week) it was estimated that a gin would operate at 80 percent efficiency, that is, a 10 bale-per-hour gin would be able to process eight bales per hour (.80 x 10 bales/hr. = 8.0 bales per hour). With a single shift, it was assumed that the work crew could operate the gin 10 hours per day. For example, a rated 10 bale-per-hour gin operating at 80 percent efficiency would be expected to process 480 bales per week (.80 x 10 bales/hr. x 60 hours/wk. = 480 bales per week).

[2]Gins are operated at 80 percent efficiency (defined above) for two ten-hour shifts per day, six days per week. The gin is operated for a total of 120 hours per week.

[3]Gins are operated at 80 percent efficiency (defined above) for one ten-hour shift per day, seven days per week. The gin is operated for 70 hours per week.

[4]Gins are operated at 80 percent efficiency (defined above) for two ten-hour shifts per day, six days per week. On the seventh day, only one ten-hour shift is employed. Each gin would be operated 130 hours per week.

[5]Mesilla Valley.

[6]Hatch Valley plus Socorro and Otero counties.

Table 9. Estimated number of weeks hypothetically required to gin each areas 1970-71 production as determined by the four gin utilization levels, 1970-71

Area	Six Days		Seven Days	
	Single shift (60 hours)[1]	Double shift (120 hours)[2]	Single shift (70 hours)[3]	Double shift (130 hours)[4]
	number	number	number	number
Hidalgo	7.54	3.77	5.85	3.15
Luna	11.21	5.60	9.61	5.17
Dona Ana (South)[5]	6.54	3.27	5.61	3.02
Dona Ana (North)[6]	7.05	3.52	6.04	3.25
Texas (North El Paso)	9.59	4.78	8.22	4.43
Chaves	4.77	2.39	4.09	2.20
Eddy	7.51	3.76	6.44	3.47
Lea	6.29	3.15	5.39	2.90
Roosevelt-Quay	3.40	1.70	2.92	1.57

[1]Assumed all gins in region were operated 60 hours per week.
[2]Assumed all gins in region were operated 120 hours per week.
[3]Assumed all gins in region were operated 70 hours per week.
[4]Assumed all gins in region were operated 130 hours per week.
[5]Mesilla Valley.
[6]Hatch Valley plus Socorro and Otero counties.

pacity. The information in table 9 shows that during the 1970-71 season, the Luna County area more fully utilized its ginning capacity than did any other area, while the Roosevelt-Quay area utilized its ginning capacity the least.

The information in table 10 shows the proportion of the ginning capacity utilized by gins by area for the four consecutive weeks of greatest volume and the week of greatest volume. See table 10 to determine how percents were computed. In all areas, except Luna County, ginning capacity was not fully used during the week of greatest volume. In the Chaves and Roosevelt-Quay areas, the ginning capacity was used at only one-third of its "potential" output levels. None of the study areas, except Luna County, were utilizing more than 90 percent of their potential ginning capacity during the week of greatest volume.

The information in table 11 shows the number of bales processed per hour of rated

Table 10. Proportion of ginning capacity utilized per week by area gins during week of greatest volume and during the four consecutive weeks of greatest volume, 1970-71[1]

Area	Four Consecutive Weeks of Greatest Volume	Week of Greatest Volume
	percent	percent
Hidalgo	48	60.8
Luna	92	106.0
Dona Ana (South)	50	56.8
Dona Ana (North)	57	89.6
Texas (North El Paso)	69	81.0
Chaves	35	37.0
Eddy	62	85.5
Lea	47	59.0
Roosevelt-Quay	28	32.0

[1]Percentage of ginning capacity utilized was determined by dividing 1970-71 volume level by potential volume level. Potential volume level was determined by assuming that gins in regions would operate 120 hours per week at 80 percent efficiency.

Table 11. Number of bales ginned per hour of gin capacity, by area, 1970-71[1]

Area	Number of Bales	
	Saw ginned	Roller ginned
Hidalgo	362	
Luna	498	928
Dona Ana	311	332
Texas (North El Paso)	460	476
Chaves	227	
Eddy	361	
Lea	298	
Roosevelt-Quay	163	

[1]These values were determined by dividing each areas total bales ginned by the total bale per hour capacity of gins in that area.

capacity by area during the 1970-71 ginning season. For example, in the Roosevelt-Quay study area, saw gins on the average processed 163 bales per hour of rated ginning capacity. In contrast, in the Luna County study area, saw gins on the average processed 498 bales per hour of rated ginning capacity. The average number of bales processed per hour of ginning capacity by area gives some relative measure of gin capacity use in each study area. Those areas which had larger values utilized existing per-hour ginning capacity to a greater extent. The values associated with each study area (table 11) support the findings of tables 9 and 10. That is, capacity of gins in the Luna study area was most fully utilized; whereas, the capacity of gins in the Roosevelt-Quay area was least utilized. Note that the capacity of the roller gin in the Luna area was used to nearly twice the extent (928 bales per hour of rated capacity) of gins in other study areas.

Many gin plants within the state are operating four to five months per ginning season (120-150 days). The information in figures 2-10 shows that most of the cotton is processed in a four to five week (consecutive) period; that is, about 70 percent of the cotton is processed in 35 days (23-28 percent of the length of ginning season). This implies that gins are being underutilized during a major portion of the ginning season. It also implies that the efficiency of the processing system could be enhanced considerably if all but a few gins in each area were closed during the slack portion of the harvesting season.

The information in figures 2 through 10 gives an approximation of the total number of bales ginned per week by gins in each of the regions during the 1970-71 harvest season. The horizontal lines indicate the "potential ginning output" associated with specified gin utilization levels. The upper "potential ginning output" level is based on the assumption that each gin within the area operates 120 hours per week at 80 percent efficiency.[12] The lower "potential ginning output" level is based on the assumption that each gin within the region operates 70 hours per week at 80 percent efficiency. For example, in Hidalgo County, the upper horizontal line indicates the "potential ginning output" (1,344 bales/week) based on the assumption that the gins operated 120 hours per week at 80 percent efficiency, while the lower horizontal line indicates the "potential ginning output" (862 bales/week) based on the assumption that gins operate 70 hours per week at 80 percent efficiency.

Based on the "potential ginning output", there was substantial excess plant capacity, even during the peak output levels. Only in Luna County did the actual ginning output levels ever exceed the "potential ginning output" level, which was based on the assumption that gins in that region operated 120 hours per week (upper horizontal line).

The lower "potential ginning output" level (based on assumption that gins in regions operated 70 hours per week at 80 percent efficiency) was exceeded during actual peak output by the gins in Lea, Eddy, Dona Ana (North) and Luna County areas. Based on the information in figures 2 through 10, the gins in the Hidalgo, Dona Ana (South), Chaves, and Roosevelt-Quay study areas had on the average more excess capacity than gins in other New Mexico ginning areas.

[12] For example, a 10 bale-per-hour gin operating at 80 percent efficiency would be expected to gin 8 bales per hour (10 bales/hr. x .80).

Fig. 2. Bales ginned per week in Hidalgo County, 1970-71

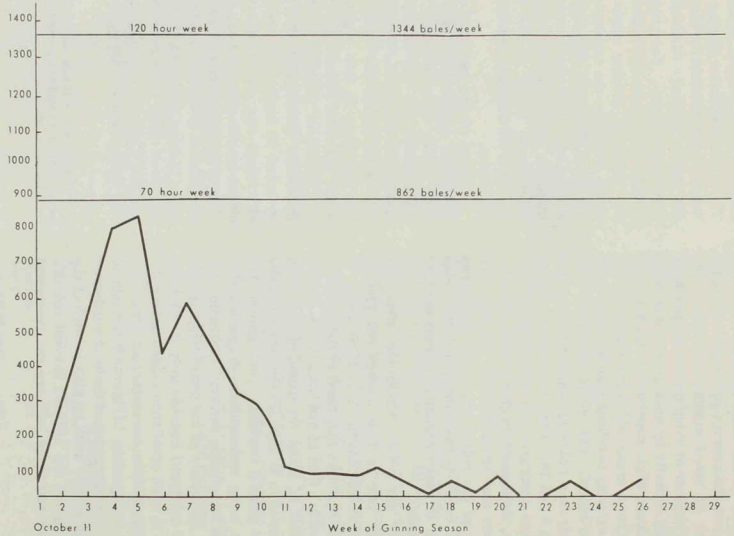


Fig. 3. Number of bales ginned per week in Luna County, 1970-71

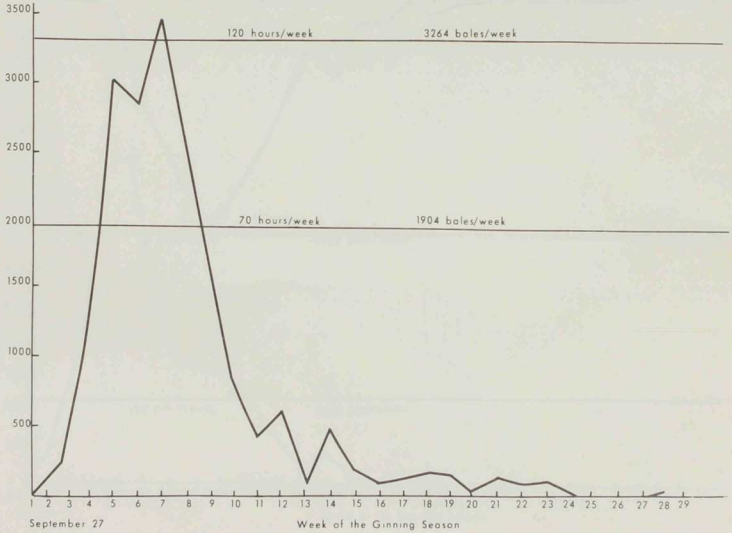


Fig. 4. Number of bales ginned per week in South Dona Ana County, 1970-71

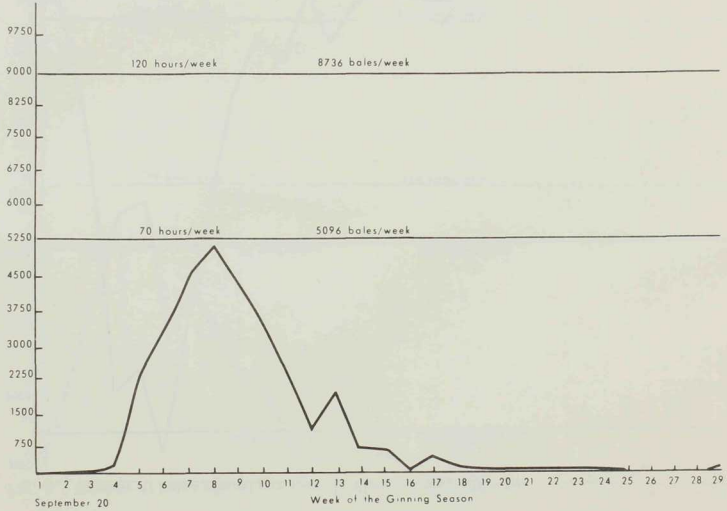


Fig. 5. Number of bales ginned per week in North Dona Ana County, 1970-71

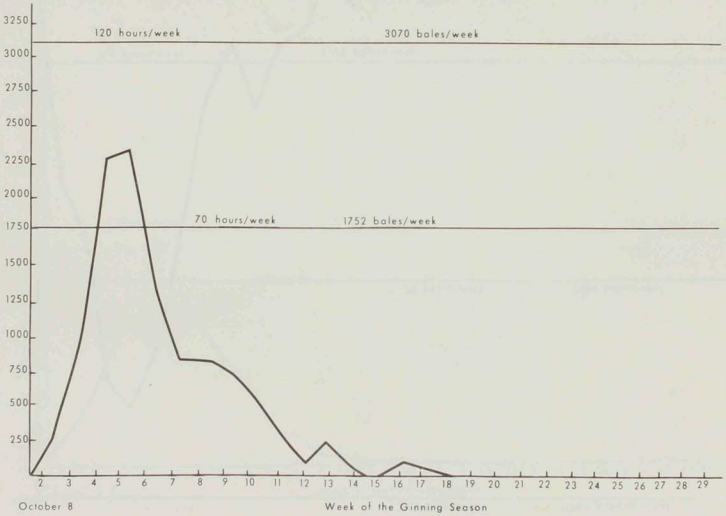


Fig. 6. Number of bales ginned per week by gins north of El Paso in Texas, 1970-71

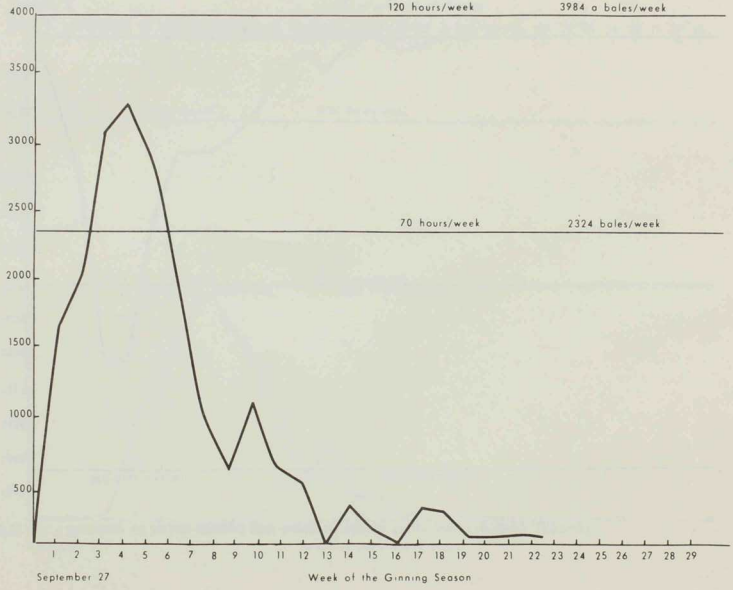


Fig. 7. Number of bales ginned per week in Chaves County, 1970-71

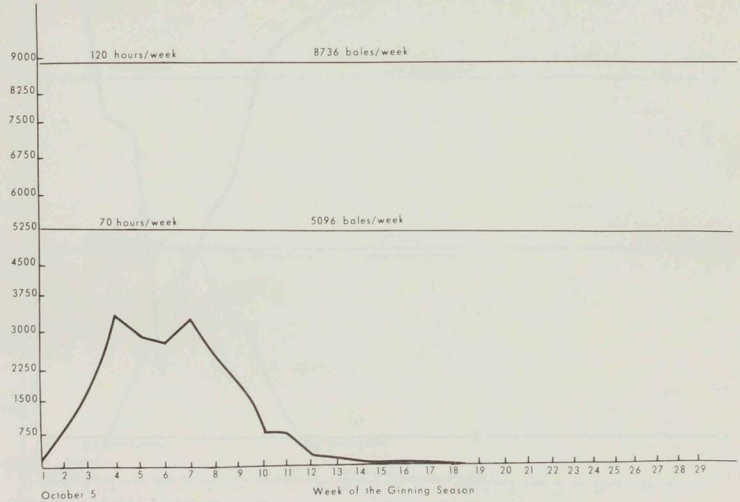


Fig. 8. Number of bales ginned per week in Eddy County, 1970-71

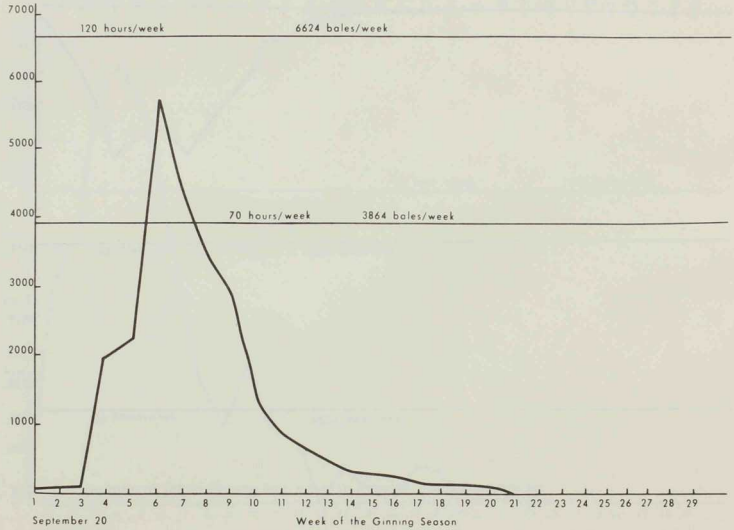


Fig. 9. Number of bales ginned per week in Lea County, 1970-71

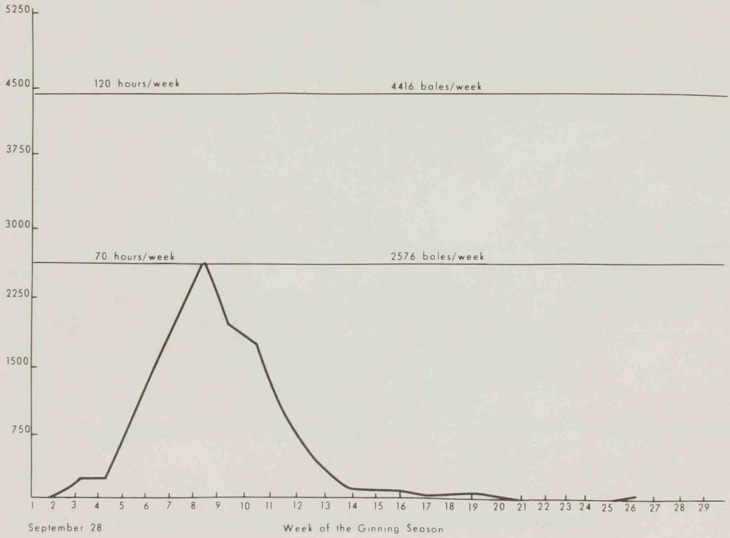
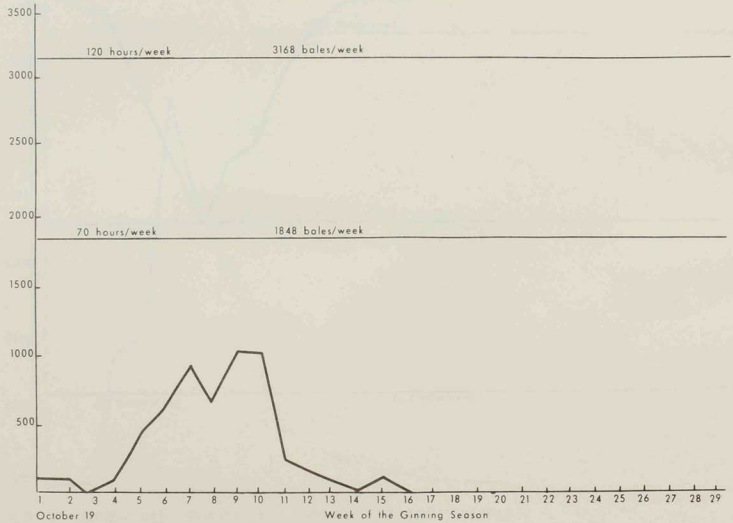


Fig. 10. Number of bales ginned per week, Roosevelt-Quay Region, 1970-71



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